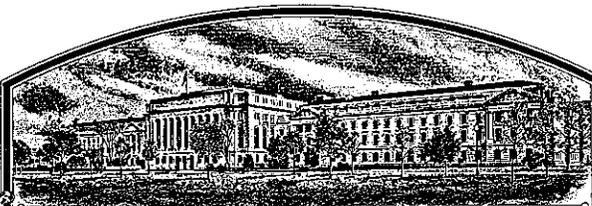


No.

8200185



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

J. J. van der Have B. V.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (ACT, 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

FESTULOLIUM

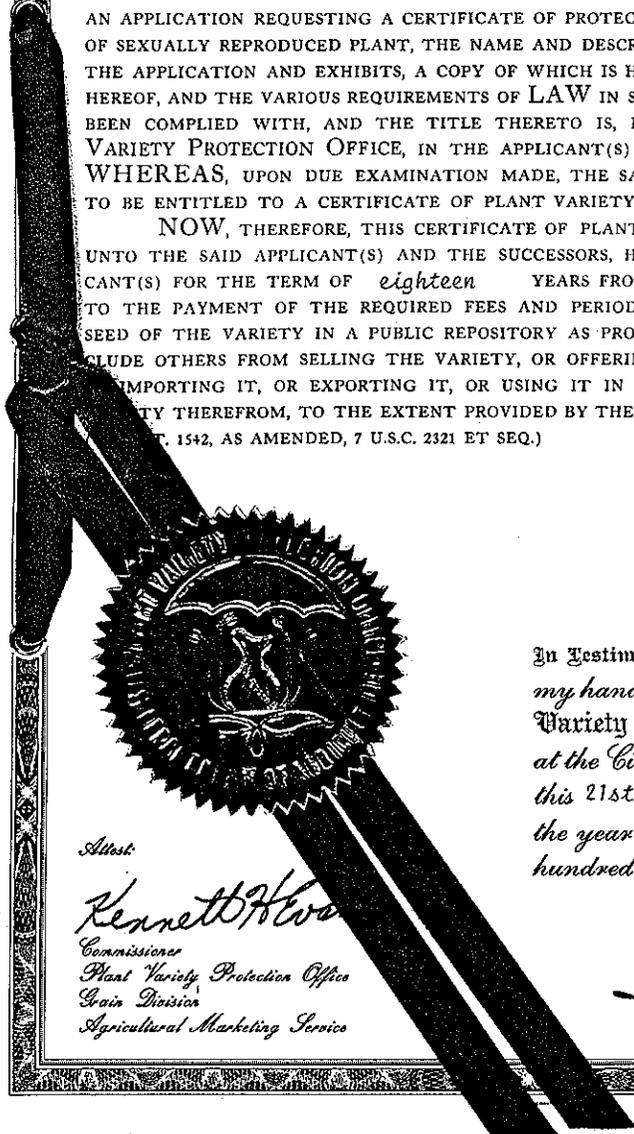
'Tandem'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 21st day of July in the year of our Lord one thousand nine hundred and eighty-three.

Attest:

Kenneth H. Wood
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture



APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

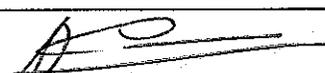
1. NAME OF APPLICANT(S) Koninklijk Kweekbedrijf en Zaadhandel D.J. van der Have B.V.		2. TEMPORARY DESIGNATION HXF 4		3. VARIETY NAME T A N D E M	
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) P.O. Box 1 4420 AA Kapelle Netherlands		5. PHONE (Include area code) 1135-1254		FOR OFFICIAL USE ONLY PVPO NUMBER 8200185	
6. GENUS AND SPECIES NAME X Festulolium braunii (K.Richt.) A. Camus		7. FAMILY NAME (Botanical) -			
8. KIND NAME Festulolium		9. DATE OF DETERMINATION 1979		FILING DATE 9/22/82 TIME 11:30 <input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation		11. IF INCORPORATED, GIVE STATE OF INCORPORATION Netherlands		FEE RECEIVED AMOUNT FOR FILING \$ 500.00 DATE 9/22/82 AMOUNT FOR CERTIFICATE \$ 250.00 DATE 6/6/83	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Mr. Stan Rollin 6802 Orem Drive Maryland 20810 Laurel 20707		12. DATE OF INCORPORATION 8th March 1973			
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED					
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)		c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)			
b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement		d. <input type="checkbox"/> Exhibit D, Additional Description of the Variety			
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No					
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input checked="" type="checkbox"/> Certified			
18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No					
19. HAVE RIGHTS BEEN GRANTED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No					
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					

SIGNATURE OF APPLICANT

D.J. Glas

DATE

SIGNATURE OF APPLICANT



DATE

02-9-14

INSTRUCTIONS

General: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (*\$250 filing fee and \$250 examination fee*) to U.S. Department of Agriculture, Agricultural Marketing Service, Livestock, Meat, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (*See section 180.175 of the Regulations and Rules of Practice.*) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

Item

- 9 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41 (a) of the Act and (2) the date a decision was made to increase the seed.
- 14a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 14b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 14c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 14d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 15 If "Yes" is specified (*seed of this variety be sold by variety name only as a class of certified seed*) the applicant may **NOT** reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "No," he may change his choice. (*See section 180.16 of the Regulations and Rules of Practice.*)
- 16 See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

GPO 890-698



Exhibit A. Origin and Breeding History of the Variety.

Tandem originates from a species cross between various diploid varieties of *Lolium multiflorum* and *Festuca pratensis*, made in 1963. In 1964 F1- seed was harvested.

The F1-seed was planted out in a spaced-plant field and only those hybrids were selected that did not produce any seed. Tillers of the sterile F1-plants were treated with colchicine to double the number of chromosomes in 1966. The treated plants were allowed to intercross and C1-seed was harvested on individual plants in 1967.

The C1-families were further multiplied for another 2 generations: C2-seed was harvested from individual C1-plant plants, while C3 seed was harvested in bulk from 36 C2-plants. At each generation only those plants or families were selected with the highest fertility and with an appearance as *Lolium multiflorum*, whereby the spike possessed a second glume.

The C3-families highest in seed yield were evaluated in a herbage yield trial during 1970-1973. The highest yielding families with a good persistence and a good disease resistance were selected. Individual plants were raised from these families and planted at wide spacing. Observations were made on individual plants during 2 years, whereafter plants with a matching appearance were selected. Several experimental varieties were developed and Syn-1 seed was harvested in 1976. The experimental varieties were tested in a herbage yield trial: HXF 4 emerged as a productive variety. Syn-2 seed was produced in 1978.

Syn-1 and Syn-2 seed of HXF 4 were compared as spaced plants. Considering the fact that HXF 4 is a species cross, no extreme variants were observed in 2 generations of reproduction. The variety proved to be stable during the 2 generations of reproduction.

In 1979 it was decided to produce enough breeders seed for the anticipated need over the next 10 years and to release the variety HXF 4 under the varietal name Tandem.

Exhibit B. Novelty statement.

Tandem closely resembles *Lolium multiflorum* but differs from it by the presence of a second glume on the spike and by the following characteristics:

- Tandem has the ability to survive severe field burning (3 years of continual burning), while Italian ryegrass cannot survive field burning once.
- Tandem will withstand 3 lbs of Karm ex. herbicide with no damage while this treatment will selectively remove Italian ryegrass out of Kentucky bluegrass fields.
- The seed head forming ability of this variety is much more similar to a typical meadow fescue than Italian ryegrass that is very determinate and abundant.
- Tandem shows a better drought resistance than Italian ryegrass and is much more winterhardy than Italian ryegrass.



Subject: Application No. 8200185 Festulolium "Tandem".

1 Does each spikelet have a second glume?

Of the 1080 spikelets observed, originating from 540 culms of 54 plants, 54% possessed a second glume. Each spikelet therefore does not have a second glume.

2 Do all plants have a second glume?

Of the 54 plants observed (10 culms per plant), 2 plants did not possess a second glume.

3 Are there any other similarities between "Tandem" and Festuca pratensis, particularly morphological?

23% Of the plants possessed inflorescences that were similar to that of Festuca pratensis: branched flowering-heads with a main axis, divided branches and stalked spikelets.

4 Please supply supporting data for each of the differences given in Exhibit B that were observed between "Tandem" and Lolium multiflorum.

- Tandem has the ability to survive severe field burning (3 years of continual burning), while Italian ryegrass cannot survive field burning once. This observation was made under practical field conditions in Oregon. It is a question of survival or no survival - no data are available.

- Tandem will withstand 3 lbs of Karmex herbicide with no damage while this treatment will selectively remove Italian ryegrass out of Kentucky bluegrass fields.

This observation was made under practical field conditions in Oregon. As with burning, this is a question of survival - no data are available.

- The seed head forming ability of this variety is much more similar to a typical meadow fescue than Italian ryegrass that is very determinate and abundant.

The range in time of head emergence is expressed by the standard deviation of that characteristic.

The standard deviation of the time of head emergence for Tandem in 1981, amounted to: 5.4 days.

The standard deviation for Italian ryegrass (mean of 15 varieties) amounted in 1980 to: 3.5 days.

Tandem therefore has a more extended period of head emergence than Italian ryegrass.

./.

5 How does "Tandem" differ from all other varieties of Festulolium braunii; for example "Elmet" as given in the Aberystwyth Report for 1977.

Tandem was included in a herbage yield trial together with the Festulolium varieties Elmet (4n)
Prior (4n)

Sowing date: September 1980
Plotsize: 1.54 x 5.3
Replicates: 3

Relative dry matter yield

	1981 (5 cuts)	1982 (4 cuts)	total
Tandem	105	96	102
Elmet	110	80	98
Prior	104	78	94
C.V.%	3.0	5.0	
LSD 0.05	5.7	9.5	

Winterhardiness (1 = good, 9 = poor).

	28/1/82	9/2/82	2/4/82
Tandem	5.0	5.0	3.7
Elmet	9.0	7.0	7.0
Prior	9.0	8.3	7.0

Persistence (1 = good, 9 = poor).

	6/11/81	4/11/82
Tandem	5.0	5.0
Elmet	7.0	7.0
Prior	5.0	7.0

Tandem has a better winterhardiness and shows a better persistence than Elmet and Prior. The better winterhardiness of Tandem, after the severe winter 1981/1982, is expressed by the dry matter yield of the first cut in 1982:

First cut 1982 (4/6/82) - relative dry matter yield.

Tandem	100
Elmet	73
Prior	76
C.V.%	5.4
LSD 0.01	13.5

6 Describe the auricles of "Tandem" as to hairiness and the length of lemma awns.

- Auricles

Auricles are glabrous and have a pointed shape.

- Lemma awns

The length of the lemma awn was measured on two seeds per plant, total 60 plants. The length varied from 0.mm (absent) to 7.7mm, with an average awn length of 2.84mm. The shortest awn measured 0.5mm.

7 Dried samples.

5 Culms with branched inflorescences and 5 culms with unbranched inflorescences are submitted.

FORM GR-470-36 (9-76)

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE GRAIN DIVISION HYATTSVILLE, MARYLAND 20782 OBJECTIVE DESCRIPTION OF CULTIVARS RYEGRASS (Lolium spp.)

OR USE THESE NUMBERS TO IDENTIFY

NAME OF APPLICANT(S) Koninklijk Kweekbedrijf en Zaadhandel D.J. van der Have B.V.

VARIETY NAME OR TEMPORARY DESIGNATION TANDEM

ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code) P.O. Box 1 4420 AA Kapelle, Netherlands

FOR OFFICIAL USE ONLY PVPO NUMBER 8200185

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in first box (e.g. 089 or 09) when number is either 99 or less or 9 or less. Descriptions of characters should represent those that are typical for the variety. Ranges may be given also. Measured data should be for SPACED PLANTS. Give additional description for all characteristics that cannot be adequately described in the form below. Append all pertinent comparative trial and evaluation data.

1. SPECIES:

5 1 = L. MULTIFLORUM (annual or Italian; includes Westerwoldicum) 2 = L. PERENNE (perennial) 3 = L. RIGIDUM (includes Wimmera) 4 = HYBRID (of species) 5 = OTHER (Specify) X Festulolium braunii

2. PLOIDY:

2 1 = DIPLOID 2 = TETRAPLOID 3 = OTHER (Specify)

3. DURATION:

2 1 = ANNUAL OR BIENNIAL 2 = SHORT LIVED PERENNIAL (3-4 years) 3 = PERENNIAL (more than 4 years)

STANDARD CULTIVARS 1 = GULF 2 = WIMMERA 62 3 = LINN 4 = PELO 5 = NORLEA 6 = ABERYSTWYTH S-23 7 = MANHATTAN 8 = PENNFINE

4. MATURITY (50% HEADED) Use standards from above for comparison:

7 1 = VERY EARLY 3 = EARLY 5 = MEDIUM 7 = LATE 9 = VERY LATE 1 2 3 DAYS EARLIER THAN 6 STANDARD CULTIVAR 2 3 DAYS LATER THAN 1 STANDARD CULTIVAR

5. MATURE PLANT HEIGHT (Use standard cultivars from above):

1 0 1 CM. HIGH 1 5 CM. SHORTER THAN STANDARD CULTIVAR 1 5 CM. TALLER THAN 1 STANDARD CULTIVAR

6. PERCENT WINTER DAMAGE (estimated as percent of the area appearing dead). Use standard cultivars from above for comparison:

PERCENT DAMAGE OF APPLICATION CULTIVAR PERCENT DAMAGE OF STANDARD CULTIVAR

7. TURF DENSITY Use standard cultivars from above:

TILLERS PER 100 SQ. CM. LESS TILLERS PER 100 SQ. CM. THAN STANDARD CULTIVAR MORE TILLERS PER 100 SQ. CM. THAN STANDARD CULTIVAR

8. FLAG LEAF (at full growth) Use standard cultivars from above:

2 3 1 CM. LENGTH (from ligule to tip) 9 4 MM. WIDTH (at widest point) 3 = FEAVES BENT AT BOOT STAGE 1 = DEFLEXED 3 = RECURVED 3 0 8 CM. SHORTER THAN 6 STANDARD CULTIVAR 3 FLAG LEAF AT BOOT STAGE: 5 = HORIZONTAL 7 = SEMI-ERECT 9 = ERECT 1 = FEAVES BENT AT BOOT STAGE 1 STANDARD CULTIVAR 9 4 CM. LONGER THAN 1 STANDARD CULTIVAR 3 1 MM. NARROWER THAN STANDARD CULTIVAR 1 1 MM. WIDER THAN 1 STANDARD CULTIVAR

FORM GR-470-36 (9-76)

STANDARD CULTIVARS

1 = GULF
5 = NORLEA

2 = WIMMERA 62
6 = ABERYSTWYTH S-23

3 = LINN
7 = MANHATTAN

4 = PELO
8 = PENNFINE

9. LEAVES:

1 = LEAVES ROLLED IN YOUNG SHOOTS 67% of the plants
VERNATION: 2 = LEAVES SEMI-ROLLED (folded with rolled edges) 10% of the plants
3 = LEAVES FOLDED IN YOUNG SHOOTS 23% of the plants

9 5 % PLANTS WITH ANTHOCYANIN IN LOWER LEAF-SHEATH

2 FOLIAGE COLOR: 1 = YELLOW GREEN
2 = MEDIUM GREEN
3 = BLUE GREEN

10. SPIKE:

3 4 1 MM. SPIKE LENGTH (tip to internode below lowest floret)

MM. SHORTER THAN

1 0 3 MM. LONGER THAN

8 8 0 0 MG. PER TEN SPIKES (trimmed to internode below lowest floret)

3 0 0 MG. LIGHTER PER TEN SPIKES THAN

2 7 0 0 MG. HEAVIER PER TEN SPIKES THAN

FLORETS PER SPIKELET

PERCENTAGE OF PLANTS WITH:

BACHIS: 7 2 % SMOOTH 2 8 % ROUGH

SPIKE COLOR: 4 3 % GREEN 1 0 % PURPLE 4 7 % green/purple

LEMMA: 3 7 % AWNED 2 8 4 MM. AWN LENGTH

1 1 MM. GLUME LENGTH 1 1 = SPIKELET LENGTH NEARLY EQUAL TO OUTER GLUMES
2 = SPIKELET LENGTH MUCH LONGER THAN OUTER GLUMES

11. COLEOPTILE:

9 5 % PLANTS WITH ANTHOCYANIN IN COLEOPTILE

12. ANTHOR COLOR:

% PLANTS WITH WHITE ANTHERS 5 9 % PLANTS WITH YELLOW ANTHERS

1 0 % PLANTS WITH PURPLE ANTHERS 3 1 % plants with purple/yellow anthers

13. ROOT AND PLANT CHARACTERS:

% PLANTS WITH PROSTRATE GROWTH HABIT 3 0 % PLANTS WITH FLUROESCENT ROOTS

% PLANTS WITH UPRIGHT GROWTH HABIT

14. SEED:

3 3 MG. PER 1,000 SEED

6 7 MM. TOTAL LENGTH OF 10 SEEDS

1 7 MM. TOTAL WIDTH OF TEN SEEDS

15. DISEASE (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

<input type="text" value="6"/>	CROWN RUST (<u>Puccinia coronata</u>)	<input type="text" value="0"/>	DOLLAR SPOT (<u>Sclerotinia</u>)	<input type="text" value="0"/>	BROWN PATCH (<u>Rhizoctonia</u>)
<input type="text" value="6"/>	LEAF SPOT (<u>Helminthosporium</u>)	<input type="text" value="0"/>	MILDEW	<input type="text" value="0"/>	OTHER (<i>Specify</i>)
<input type="text" value="0"/>	SNOW MOLD (<u>Typhula</u>)	<input type="text" value="0"/>	RED THREAD (<u>Corticium</u>)	_____	

16. INSECT (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

(*Specify*) _____

17. GIVE RESEMBLANCE VALUE IN LEFT COLUMN AND VARIETY CODE NUMBER IN RIGHT COLUMN FOR VARIETY WITH WHICH COMPARISON IS MADE (1 = LESS THAN, 2 = SAME AS, 3 = MORE ERECT, MORE RESISTANT, DENSER, MORE PERSISTENT, DARKER OR GREATER HEIGHT.):

RESEMBLANCE	CHARACTER		SIMILAR VARIETY
<input type="text" value="1"/>	PLANT HABIT (erectness)	<input type="text" value="1"/>	1 = GULF
<input type="text" value="3"/>	TILLERING	<input type="text" value="1"/>	2 = WIMMERA 62
<input type="text" value="3"/>	WINTER HARDINESS	<input type="text" value="1"/>	3 = LINN
<input type="text" value="3"/>	HIGH TEMP. STRESS RESISTANCE	<input type="text" value="1"/>	4 = PELO
<input type="text" value=""/>	TURF PERSISTENCE	<input type="text" value=""/>	5 = NORLEA
<input type="text" value="2"/>	PLANT COLOR	<input type="text" value="1"/>	6 = ABERYSTWYTH S-23
<input type="text" value="2"/>	VERTICAL SEEDLING GROWTH RATE	<input type="text" value="1"/>	7 = MANHATTAN
<input type="text" value="3"/>	CROWN DENSITY	<input type="text" value="1"/>	8 = PENNFINE
<input type="text" value=""/>	MOWER SHREDDING RESISTANCE	<input type="text" value=""/>	

18. GIVE AREA OF ADAPTATION AND INTENDED USE: _____

19. GIVE AREA TEST RESULTS PRESENTED FROM: _____

COMMENTS: